CANADA

THE CHEMICAL WEAPONS CONVENTION AND THE CONTROL OF SCHEDULED CHEMICALS IN CANADA

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Table of Contents

Preface iii
Introduction iv
Principal Findings and Conclusions v

Part I
The Chemical Weapons Convention and the Harmonized Commodity Description and Coding System (HS) 1
Introduction 2
The HS System 2
The Chemical Annex CD/1116 4
Schedule 1 5
Schedule 2A/B 6
Schedule 3 7

Part II
The Classification of Toxic Chemicals in Schedule 3 and the Transportation of Dangerous Goods 11
Introduction 12
Transportation of Dangerous Goods 12
Canadian Framework 20

Part III
The Chemical Weapons Convention and the Hazardous Products Act, 1987 23
Introduction 24
The Hazardous Products Act 24

Part IV
The Chemical Weapons Convention and the Canadian Environmental Protection Act 29
Introduction 30
The Canadian Environmental Protection Act 30

Appendix I
Pertinent Aspects of Canadian Environmental Protection Act 35

Tables

Table 1 The Classification of Toxic Chemicals 14
Schedule 3, The HS System and the Transportation of Dangerous Goods (TDG)

Table 2 Schedule 3, Transportation Hazards and Packing ... 15

Table 3 Packing Groups for Class 6 16

Table 4 Grouping Criteria for Administration Through Oral Ingestion, Dermal Contact and Inhalation of Dusts and Mists 17

Table of Contents (cont'd)

Table 5 Class 8 - Corrosive Substances 18

Table 6 Labels for Class 2 Gases with Subsidiary Risk(s) 19

Table 7 Classification of Controlled Substances Under WHMIS 26

PREFACE

This document continues the work appearing in the publication distributed at the 1989 Canberra Conference and entitled "Role and Function of a National Authority in the Implementation of a Chemical Weapons Convention". It was subsequently distributed to the Conference on Disarmament under covering letter CD/994.

At the Canberra Conference in 1989, Canada sought to impress upon other participants the need for preparations at the national level in order to be in a position to implement an eventual Chemical Weapons Convention. Now, in 1992, we are pleased that this call is being increasingly taken up, as we look with hope to the conclusion of the negotiations.

Prepared by a consultant from the University of Saskatchewan in collaboration with staff of the Verification Research Unit of External Affairs and International Trade Canada, this document is in many ways illustrative of the potential utility of existing legal and regulatory arrangements. It does not necessarily represent a particular policy position of the Government of Canada.

INTRODUCTION

The negotiations on a Chemical Weapons Convention (CWC) at the CD in Geneva are continuing methodically and it is now frequently stated that a Convention is expected by the end of the 1992 negotiating session. Thus, it makes it important for us to continue to review the manner in which Canada will comply with its obligations under the CWC.

This research paper notes that there are several pieces of legislation regarding the control of toxic chemicals in Canada and suggests that the data already collected under regulations in Canada could probably serve our needs in demonstrating compliance. There would, of course, be a need to devise the appropriate enabling legislation for a National Authority to act on Canada's behalf, and it would require access to the inspection mechanisms and data already available to government departments that the latter employ to carry out their current responsibilities.

There are four parts to this paper. The first reviews the Harmonized Commodity Description and Coding System (HS) and its international and national use; and the second, the utility of the methodology adopted for regulatory purposes in the transportation of dangerous goods. The third and fourth parts are devoted to two pieces of national legislation: the Hazardous Product Act and its associated regulations entitled Workplace Hazardous Materials Information System (WMHIS); and the Canadian Environmental Protection Act (CEPA).

The aim of this paper is to stimulate discussion and make various departments aware of approaching needs with respect to implementing a Chemical Weapons Convention at the national level.

Principal Findings and Conclusions

In today's world, toxic chemicals are ubiquitous. They are not just found in the workplace and in laboratories, but in the home and throughout the environment. This has led to a detailed scrutiny of man-made products and their impact on the environment. Chemicals, as toxic substances, have become subject to all kinds of controls at the national and international level. A recent example is the Convention for the Protection of the Ozone Layer (Montreal Protocol) that entered into force in 1988. This research paper examines some of the legislation and regulations that apply to toxic chemicals in Canada. These encompass import and export, transportation, hazards in the workplace and in the environment.

The Harmonized Commodity Description and Coding System (HS) has been alluded to as a mechanism that could be used to monitor chemicals of interest to the CWC. The analysis shows that, in its present form, it could only be used as an alerting system since few, if any, of the chemicals form a single line item in the HS for reporting tariff and trade data. It would require an international agreement to develop a modified form that would emcompass the detail required by the CWC.

The area of transportation of dangerous goods (TDG) is fully developed for all chemicals that appear on Schedule 3 of the draft CWC, and there is a straightforward mechanism to add additional substances to the United Nations list of dangerous substances. Many countries have their own legislation and regulations on the transportation of hazardous goods, and they use the same hazard classification and individual numbers for dangerous substances. This system is highly developed and directly relevant to the CWC.

Safety in the workplace has now become a major issue in most Western nations. In Canada the Hazardous Product Act (HPA) and its regulations (WHMIS) control all hazardous substances in the workplace. No controlled substance can be used without appropriate information being supplied to all workers who handle these substances. If any substance that appears on any Schedule of the draft CWC is used in commerce within Canada, then detailed information must be supplied by the manufacturer and any employer who subsequently uses that product. This means that information collected under this Act could be of use to the proposed National Authority under a CWC.

The Canadian Environmental Protection Act (CEPA) has been described as a "cradle to grave" approach to the monitoring of all chemicals in use in Canada. Matters related to their import, export, production, as well as the eventual disposal of waste materials, are encompassed under this Act. The information acquired under this Act

by Environment Canada covers most of the data required by a National Authority under a CWC, but in a different form with differing requirements. One approach to performing related tasks by a National Authority might be through appropriate enabling legislation that could allow the use of CEPA's data collection and inspection mechanisms to fulfil domestic Canadian obligations under a Chemical Weapons Convention.

In summary, all toxic chemicals are controlled in transportation, in the workplace and in the environment at this time, and all of the substances listed in schedules in the draft CWC are already subject to regulation or would be subject to regulation if they were used in commerce within Canada.

PART I

The Chemical Weapons Convention

and the

Harmonized Commodity Description and Coding System (HS)

Introduction

The Harmonized Commodity Description and Coding System, more simply known as the HS System, is an internationally developed system which allows direct comparisons of international trade statistics since it is based on a systematic description of goods. All countries that employ the HS System use the same six digit number for items that are statistically relevant. It has been suggested that the HS system could be utilized directly to monitor substances listed in the schedules of chemicals in the draft Chemical Weapons Convention. This section explores the utility of the HS System to the requirements of a CWC.

The HS System CD/1116

In 1981, Canada began work towards the introduction of the Harmonized Commodity Description and Coding System (HS) then being developed under the international Customs Cooperation Council (CCC). The major reasons for this decision were: the HS would provide a comprehensive classification that would be easier to administer and be more easily understood by importers, exporters and manufacturers; it would allow compilation of reliable international trade statistics; there would be a direct relationship between Canadian tariff and trade data and that of other countries using the HS system; and it would facilitate the preparation of export documents. The work of the CCC in

developing a six digit nomenclature sufficiently detailed to identify statistically-relevant goods was completed by 1983 when a draft convention was introduced and the implementation date set for 1988. In Canada this meant the conversion of the Canadian International Trade Classification (CITC) to an HS based system. This required further subdivision beyond the six digit nomenclature. The six digit number was extended to eight to provide the level required for tariff purposes, and then further to ten for the compilation of trade statistics. The HS classification depends upon the intrinsic characteristics of the goods rather than upon end-use as was the case for the previous system. This required the development of Canadian Rules, Supplemental Notes and Statistical Notes. There are now 65 countries which have either implemented or indicated a target date for the Harmonized System, and this number will grow.

This means that there is an internationally agreed HS system, and all of the substances listed in schedules [1], [2] and [3] of the CWC could be specifically targeted for reporting purposes. The specific numbers are generated by the application of a set of rules to the 97 chapters of HS, and can be used for purposes of export and import control.

This numbering system should be considered as a tool to assist in meeting potential CWC obligations as regards the provision of data on scheduled chemicals; and, should it be decided to proceed in this fashion, it will involve the cooperation of three Federal Government Departments: External

Affairs and International Trade Canada; Finance Canada; and Statistics Canada.

The Chemical Annex CD/1116

Schedule 1 of the "rolling text" of the Chemical Weapons Convention (CWC) in Article VI is a list of chemicals whose use will be severely restricted and monitored either because of prior use or stockpiling as chemical weapons. There are also a few substances that appear either because of their potential use in binary weapons or as "markers" to indicate the possible inclusion of toxin weapons. It should be emphasized that the schedule is not final and, to some extent, may be considered as illustrative.

If an attempt were made to apply the HS system to this schedule using only the six digit categorization that would be common at the international level, then the following would result:

SCHEDULE 1		
GROUP	**NAME**	**HS Number**
1	Alkyl phosphonofluoridates	29.31.00
2	Alkyl phosphoramidocyanidates	29.31.00
3	Alkyl phosphonothiolates	29.31.00
4	Sulphur Mustards	29.30.90
5	Lewisites	29.31.00
6	Nitrogen mustards	29.21.19
7	3-quinuclidinyl benzilate	29.30.90
	or	29.39.90
	or	29.39.60
8	Saxitoxin	--
9	Ricin	--
10	Alkyl phosphonyldifluorides	29.31.00
11	0-Alkyl aminoethyl alkyl phosphonites	29.31.00
12	0-Alkyl phosphonochloridates	29.31.00
13	Pinacolyl alcohol	29.05.19

A similar table can be developed for the Schedule 2A/B chemicals; Schedule 2A is to contain key precursor chemicals to chemical weapons, while Schedule 2B is to contain other chemicals that could pose a risk to the CWC based on their toxicity.

GROUP	NAME	HS NUMBER
	SCHEDULE 2A	
1	Compounds with C-P bonds	29.31.00
2	N, N-dialkyl phosphoramidic dihalides	29.31.00
3	Dialkyl phosphoroamidates	29.31.00
4	Arsenic Trichloride	28.27.39
5	2,2 diphenyl-2- hydroxyacetic acid	29.18.19
6	Quinunclidin - 3 -ol	29.33.90
7	N,N-dialkylaminoethyl -2-chloride	29.21.19
8	N,N-dialkylaminoethane-2-ol	29.22.19
9	N,N-dialklyaminoethane-2-thiol	29.30.90
10	Thiodiglycol	29.30.90
11	Pinacolyl alcohol	29.05.19
	SCHEDULE 2B	
1	Amiton	29.31.00
2	PFIB	29.03.30

Schedule 3 includes precursors to chemicals on Schedule 2A and chemicals that were previously used as chemical weapons but are now commercial chemicals produced in large tonnages. These are displayed in tabular form as follows:

SCHEDULE 3

GROUP	NAME	HS NUMBER
1	Phosgene	28.12.10
2	Cyanogen Chloride	28.12.10
3	Hydrogen cyanide	28.11.19
4	Chloropicrin	29.04.90
5	Phosphorus oxychloride	28.12.10
6	Phosphorus trichloride	28.12.10
7	Phophorus pentachloride	28.12.10
8	Trimethyl phosphite	29.20.90
9	Triethyl phosphite	29.20.90
10	Dimethyl phosphite	29.20.90
11	Diethyl phosphite	29.20.90
12	Sulphur monochloride	28.12.10
13	Sulphur dichloride	28.12.10
14	Thionyl Chloride	28.12.10

It will be noted that almost all of the compounds listed in the Chemical Annex fall into chapter 28 and 29 of the HS system. Chapter 28 is essentially concerned with inorganic chemicals and simple carbon compounds. The general heading 28.12 covers halides and halide oxides of non-metals; subclassification 28.12.10 is the general (basket) classification of chlorides or chloride oxides and encompasses nine compounds on Schedule 3. The heading 28.11 is for 'other inorganic acids and other

inorganic oxygen compounds of non metals' and 'other inorganic acids', and so hydrogen cyanide falls into a subclassification 28.11.19. Again this is not a unique classification category. The class 28.27 includes chlorides and the subclass 28.27.39 is another subgroup.

Chapter 29 of the HS system is devoted to organic compounds and once again, there are very few line items, i.e., numbers devoted to a single substance.

29.04.90 29.04 covers sulphonated, nitrated or nitrosated derivatives of hydrocarbons and 29.04.90 the 'other' classification.

29.05.19 'other' subclass of 29.05 acylic alcohols and their halogenated, sulphonated, nitrated or nitrosated derivatives and saturated monohydric alcohols.

29.18.19 29.18 describes carboxylic acids and derivatives in general, while the subclass 29.18.19 is the 'other' category.

29.20.90 29.22 covers esters of inorganic acids and 29.20.90 the 'other' subgroup.

29.21.19 'other' subclass of 29.21 amine function compounds.

29.22.19 29.22 covers oxygen function amino compounds and 29.22.19 covers the 'other' subcategory.

29.30.90 'other' subclass of 29.30 organosulphur compounds.

29.31.00 Other organo-inorganic compounds.

29.33.90 29.33 refers to nitrogen heterocycles and again 29.33.90 is the 'other' category.

29.39.60
29.39.90 29.39 is the classification of vegetable alkaloids and derivatives. The subclass 29.39.60 is related to rye ergot while 29.39.90 is the more general 'other' category.

The HS system extends to 10 digits in Canada as noted earlier; the first six being common internationally, and the final four digits being divided between tariff and trade statistics as required. There are very few substances important enough to warrant a single line classification; most lines cover a wide range of commodity items for reporting purposes. The only way in which the HS system could cover the reporting requirement of the CWC would be the introduction of individual statistical lines to cover each substance as a single commodity. Furthermore, States Parties to the CWC would have to agree (through the CCC) on categorization numbers beyond the six digit level. This is unlikely at this stage of development of the HS system.

The present six digit number could only be considered as an alerting system. The further extension to a 10 digit number is a purely national statistical line breakdown and not conducive to international monitoring of these substances for a Chemical Weapons Convention, unless all States Parties were to adopt the same breakdown. It would require international agreement to modify the HS System by the establishment of a specific set of HS numbers for substances of concern to the Chemical Weapons Convention.

PART II

The Classification of Toxic Chemicals in Schedule 3

and the

Transportation of Dangerous Goods

Introduction

All of the chemicals listed in the schedules of the draft CWC are dangerous and would be hazardous if transported by road, rail, sea or air without appropriate precautions. The problems of the transportation of dangerous chemicals has been examined internationally and nationally and most countries have legislation on the transportation of dangerous goods that is based upon recommendations made by a United Nations expert committee. This means that there is an internationally agreed set of procedures to deal with many of the chemicals listed in the draft CWC and that all the chemicals under consideration for inclusion on the CWC's schedules could be included in existing TDG legislation and regulations.

Transportation of Dangerous Goods

The United Nations Committee of Experts on the Transportation of Dangerous Goods has developed recommendations on the transportation of such goods, and these recommendations have been published.[1] To illustrate the approach, an examination of the proposed Schedule 3 of the CWC shows that all of these substances are already covered by transportation regulations (Tables 1 and 2). The hazard classifications of interest are: 2 (Compressed Gases), 3 (Flammable Liquids), 6.1 [Poisonous (toxic) Substances] and 8 (Corrosive nature). Every substance should be assigned to the appropriate class and, where

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[1] Recommendation on the Transport of Dangerous Goods, 6th Edition, United Nations, New York, 1989.

applicable, secondary classifications are noted. Each substance classified under TDG is assigned a specific number which is used internationally for that substance.

Governments or intergovernmental organizations may submit proposals for additional substances on an approved data sheet. The list does not include substances so hazardous that their transportation is prohibited. Goods not yet assigned are given provisional classification based on analogy.

The regulations also deal with 'precedence of hazard characteristics': primary characteristics always take precedence as follows:

- substances and articles in Class 1;
- gases in Class 2;
- self-reactive substances and wetted explosives in Division 4.1;
- pyrophoric substances in Division 4.2;
- substances in Division 5.2;
- substances in Division 6.1 with a Packing Group I inhalation toxicity;
- substances in Division 6.2; and
- materials in Class 7.

TABLE 1

THE CLASSIFICATION OF TOXIC CHEMICALS

SCHEDULE 3, THE HS SYSTEM AND THE TRANSPORTATION OF DANGEROUS GOODS (TDG)

Chemical	CAS Number	HS Number	TDG	
			Class	Number
Phosgene	75-44-5	28.12.10.90.90	2	1076
Cyanogen chloride	506-77-4	28.12.10.90.90	2	1589
Hydrogen Cyanide	74-90-8	28.11.19.90.90	6.1	1614
Trichloronitromethane (Chloropicrin)	76-06-2	29.04.90.00.00	6.1 2 2 6.1	1580 1881 1882 1583
Phosphorus Oxychloride	10025-87-3	28.12.10.10.20	8	1810
Phosphorus Trichloride	7719-12-2	28.12.10.10.10	8	1809
Phosphorus Pentachloride	10026-13-8	28.12.10.10.10	8	1806
Trimethyl phosphite	121-45-9	29.20.90.90.99	3	2329
Triethyl phosphite	122-52-1	29.20.90.90.99	3	2323
Dimethyl phosphite	868-85-9	29.20.90.90.99	-	-
Diethyl phosphite	762-04-9	29.20.90.90.99	-	-
Sulphur Monochloride	10025-67-9	28.12.10.90.90	8	1828
Sulphur Dichloride	10545-99-0	28.12.10.90.90	8	1828
Thionyl Chloride	7719-09-7	28.12.10.90.20	8	1836

TABLE 2

SCHEDULE 3, TRANSPORTATION HAZARDS AND PACKING

NUMBER	HAZARDS		PACKING	
	Class	2nd Risks	Group	Method
1076	2	6.1		
		8		
1589	2	6.1		
1051	6.1	3	I	
1614	6.1		I	
1580	6.1		I	M
1581	2	6.1		M
1582	2	6.1		M
1583*	6.1			
1810	8		II	M
1809	8		II	M
2329	3		III	M
2323	3		III	M
1828	8		I	M
1836	8		I	M
1806	8		II	

* 1583 has additional special provisions associated with its transportation.

Class 2 gases which are poisonous are cross referenced to 6.1 as toxic substances; they are in class 2 because they have to be carried in cylinders with the same kind of safety factors as other gases but also carry the appropriate poison labels. Toxic substances are allocated to one of these packing groups (Table 3) depending on

the degree of toxic hazard. The assignments are based on human experience or on results from animal experiments, and methodology has also been developed for mixtures of poisonous substances.

TABLE 3

PACKING GROUPS FOR CLASS 6

(a) Packing Group I: Substances and preparations presenting a very severe risk of poisoning;

(b) Packing Group II: Substances and preparations presenting a serious risk of poisoning;

(c) Packing Group III: Harmful substances and preparations presenting a relatively low risk of poisoning.

The packing group is related to toxicity (Table 4) and so these UN regulations relate to the degree of danger involved. Specific definitions of LD_{50} are given for oral, dermal and inhalation toxicities; and a simplified threshold test is provided when LD_{50} data is not available. Substances that fall into these packing classifications have to be segregated from foodstuffs; and vehicles used for such transportation have to be inspected and, if necessary, decontaminated before re-use.

Class 8 substances are also subdivided into three groups based on the hazard they represent (Table 5) and, hence, the degree of danger involved.

TABLE 4

GROUPING CRITERIA FOR ADMINISTRATION THROUGH ORAL INGESTION, DERMAL CONTACT AND INHALATION OF DUSTS AND MISTS

Packing Group	Oral toxicity LD_{50} (mg/kg)	Dermal toxicity LD_{50} (mg/kg)	Inhalation toxicity by dusts and mists LC_{50} (mg/l)
I	≤ 5	≤ 40	≤ 0.5
II	> 5-50	> 40-200	> 0.5-2
III[a/]	Solids:> 50-200 Liquids:> 50-500	> 200-1000	> 2-10

[a/] Tear gas substances should be included in Packing Group II even if their toxicity data correspond to Packing Group III values.

TABLE 5

CLASS 8 - CORROSIVE SUBSTANCES

Group I (very dangerous substances)

Substances that cause visible necrosis of the skin tissue at the site of contact when tested on the intact skin of an animal for a period of 3 minutes or less.

Group II (substances presenting medium danger)

Substances that cause visible necrosis of the skin tissue at the site of contact when tested on the intact skin of an animal for a period of more than 3 but not more than 60 minutes.

Group III (substances presenting minor danger)

(a) Substances that cause visible necrosis of the skin tissue at the site of contact when tested on the intact skin of an animal for a period of more than 60 minutes but not more than 4 hours;

(b) Substances which are judged not to cause visible necrosis in human skin but which exhibit a corrosion rate on steel or aluminum surfaces exceeding 6.25 mm a year at a test temperature of 55°C. For the purposes of testing steel, type P3 (ISO 2604(IV)-1975) or a similar type, and for testing aluminum, non-clad types 7075-T6 or AZ5GU-T6 should be used.

Each type of permitted packing is defined and specific marking codes assigned. A UN packaging symbol denotes that the packaging complies with the specified recommendations. There is also considerable detailed information on all allowed types of packaging and containers.

The consignment of dangerous goods requires special marking, labelling and documentation to ensure that the potential risks are communicated to all these who may come in contact with the goods. Table 6 is an example of the labelling methodology.

TABLE 6

LABELS FOR CLASS 2 GASES WITH SUBSIDIARY RISK(S)

Subsidiary risk(s) label(s)	Primary risk label	Subsidiary risk
3	flammable gas (red)	none
3, 6.1	poison gas (white)	flammable gas (red)
3, 8	flammable gas (red)	8
5.1	non-flammable gas (green)	5.1
5.1, 6.1	poison gas (white)	5.1
5.1, 6.1, 8	poison gas (white)	5.1, 8
6.1	poison gas (white)	none
6.1, 8	poison gas (white)	8
8	non-flammable gas (green)	-

Fundamental to such transportation is proper documentation. Basic requirements are:

- proper shipping name;
- UN number;
- quantity;
- other requirements (national, international).

The recommendations suggest that placards be fixed to exterior surfaces and suggest the use of a document to convey all required information.

It is clear from this discussion that regulations currently in force for the transportation of dangerous goods (TDG) could be utilized to some extent in monitoring schedule 3 chemicals when they are not used on-site but transported either domestically or exported.

Canadian Framework

The latest federal legislation took effect in Canada in 1985, in the form of the Transportation of Dangerous Goods Act (federal) and the related regulations. The major objectives are the prevention of escape of dangerous goods and pollutants during their transportation and handling, and to ensure prompt notification and remedial action in the case of spills. Comprehensive tasks are established for those who handle dangerous goods, viz register, classify, label, package and document the goods to be moved by whatever form of transport; report on unusual events; and take action promptly in the event of dangerous occurrences. The Act makes provisions for exemptions, e.g. goods under the control of the Minister of National Defence; pesticides registered under the Pest Control Products Act; radioactive products where there is a license under the Atomic Energy Control Act; and explosives licensed under the Explosives Act. Some 3000 dangerous goods are specified within the regulations, and an understanding of the classification system is key to compliance with the Act.

The Federal Government has powers to inspect, as well as to take and require the taking of emergency, preventative and remedial measures. The Federal Minister of Transport appoints inspectors; an inspector may at any time enter and inspect a building where it is believed that dangerous goods are being handled. The inspector can request the opening and inspection of any container, and has the power to take samples, examine records and copy documents. The inspector has the power to take appropriate remedial action, including refusal of entry of the goods into Canada. There is an obligation on the person in charge not to impede the inspector in carrying out his duties and, indeed, to assist with these duties. The inspector may seize and remove dangerous goods, dispose or destroy abandoned goods and take reasonable emergency measures. An inspector may enter any place or property in order to execute related powers and duties. The Federal Government may recover costs and expenses related to the exercise of discretionary powers under the Act. The Minister of Transport may direct a public inquiry into the escape of dangerous goods. The Minister may require the disclosure of information on the chemical composition of goods as required for enforcement of the Act.

The Act details specific prohibitions, offences and punishments. Specifically, contravention or failure to comply with Section 4, 5 or a direction under Section 28 is an offence punishable by a fine not exceeding $50,000 for the first offence and $100,000 for each subsequent offence on summary conviction; while conviction on indictment can lead to a prison term not exceeding two years. Contravention or failure to comply with any other provision of the Act

may lead to $10,000 fines on summary conviction or a prison term not exceeding one year. Lesser breaches, considered as "ticket offences", may lead to a fine of up to $1,000 for each such offence. No person would be considered guilty of an offence under this Act if it can be established that all reasonable measures were taken to comply with the Act and the regulations.

There are various exemptions to the TDG in relation to shipment by sea where the International Maritime Dangerous Goods (IMDG) Code applies and to air transportation in accordance with the International Civil Aviation Organization (ICAO) technical instructions.

PART III

The Chemical Weapons Convention

and the

Hazardous Products Act, 1987

Introduction

In Canada, all substances that are used in the workplace that are considered to be hazardous to the health of workers are designated as controlled substances. This means that employers must obtain detailed information on all substances that could be used by their workers and provide such information to their employees. It follows that if any chemical that appears in a CWC schedule is used in commerce in Canada, then detailed information on it would be available to government agencies and that information could be made available to a National Authority.

The Hazardous Product Act

The Hazardous Products Act (HPA) of 1987 was fully implemented by 1989. This Act creates a new category of hazardous products called "controlled products". The suppliers of all such products must provide labels and material safety data sheets (MSDS) as a condition of their sale or import into Canada. The idea is that all hazardous materials in the workplace will be covered by a single regulation. The regulation is called WHMIS for Workplace Hazardous Materials Information System. It focusses on the handling, storage, use and disposal of hazardous materials. The System is tripartite in that it involves labour, industry and government. The legislation is federal but is enforced provincially by regulations set out by Provincial Occupational Health and Safety; while the Canada Labour Code (CLC) and Canada Occupational Safety and Health Regulations (COSHR) apply to federally regulated workplaces. Other components of

WHMIS are the Ingredient Disclosure List (IDL) identifying substances to be listed on MSDS when present above certain concentrations. There is a Hazardous Materials Information Review Act (HMIRA) with corresponding regulations (HMIRR) to provide a mechanism whereby ingredients in a controlled product may be protected as trade secrets.

WHMIS provides information to employees as a right. If a chemical is hazardous, then it is an employer's responsibility to convey this information through labels, worker education and MSDS. WHMIS is limited to the workplace; transportation of dangerous goods (TDG) is a parallel system to protect the general public. There is no overlap with WHMIS, e.g. workers who load or unload products are covered by WHMIS and the loaded vehicle is covered by TDG while the goods are being transported.

WHMIS regulations apply to materials designated as "controlled products"; and so classification regimes have to determine whether a substance is a controlled product and, if so, which classes apply to that product. Legally, the HPA defines a controlled product in section 2 as "any product, material or substance specified by regulations ... in any of the classes listed in Schedule II" (see Table 7). Detailed criteria are found in the Controlled Product Regulations (CPR). The Canada Labour Code and the model Occupational Safety and Health (OSH) regulation use the same definitions. Suppliers must establish whether their product(s) fall into a WHMIS class; employers are not required to develop classifications under OSH but must provide labels, MSDS and worker education for controlled products using the CPR. The system is modelled on Transport Canada's

Transportation of Dangerous Goods Regulations (TDG), and the specific criteria are also related to the United States and EEC regulations but with priority being given to consistency with other existing Canadian Regulations. There are exemptions under WHMIS as with the Transportation of Dangerous Goods.

TABLE 7

CLASSIFICATION OF CONTROLLED SUBSTANCES UNDER WHMIS

Schedule II

Class	Title
A	Compressed Gas
B	Flammable and Combustible Materials
C	Oxidizing Materials
D	Poisonous and Infectious Materials
E	Corrosive Materials
F	Dangerously Reactive Materials

There are three elements in the delivery of information to workers in WHMIS -- the product label, MSDS, and worker education. The label supplies information on the risks associated with the products and precautions to be taken, and also directs queries to the MSDS information. A supplier label is required in the first instance and, subsequently, a workplace label must be affixed to all containers in the workplace. The MSDS must be comprehensive; it supplies more information than available on a label and may be used in worker education. The MSDS must also provide information on handling, use,

disposal and emergency methods that may be required, e.g. hazardous ingredients, preparation of MSDS, physical data, fire hazard, reactivity, toxicology, first aid, and so on. The initial preparation of MSDS is the supplier's responsibility. The employer must review MSDS data sheets for currency and have them updated if necessary. In some workplaces, MSDS information is available electronically from an electronic database of over 9000 commonly used chemicals.

The management of the WHMIS programme within a company is complex but company-specific. The following steps may be necessary:

- establishment of a health and safety committee;
- inventory of substances used in the workplace;
- substances designated as controlled or otherwise;
- collection of technical information;
- classification of substances used;
- MSDS preparation;
- preparation of workplace labels;
- dissemination of information to workers; and
- education and training.

The WMHIS labelling requirements include hazard symbols, first-aid measures, risks, precautions to be taken, information on suppliers (manufacturers). The label also must refer to the MSDS which has information on product identity, hazardous ingredients, physical data, fire and explosion data, toxicological properties, hazard prevention, first aid measures, department responsible for MSDS

preparation and further information. The data has to be available in both French and English.

The net effect of WMHIS is that all industrial chemicals in the workplace are covered by hazard labels and MSDS fact sheets. The legislation is federal and appropriate powers are delegated to inspectors. In particular, the inspector has powers of entry and seizure, and can require assistance of the employer and workers during such inspections. Violations of WHMIS are federal offences and the penalties are consistent with those laid out in the case of the Transportation of Dangerous Goods. WHMIS legislation would cover all scheduled chemicals in the draft CWC if they were found in the workplace, and so any suppliers of such chemicals would have to abide by the legislative requirements of the Hazardous Products Act.

PART IV

The Chemical Weapons Convention

and the

Canadian Environmental Protection Act

Introduction

The Canadian Environmental Protection Act (CEPA) has been described as a "cradle to grave" approach to the monitoring of chemicals that are produced, imported and eventually disposed of in Canada. The powers and responsibilities given to Environment Canada under this act would allow it to collect most of the information required to demonstrate compliance with the draft CWC.

The Canadian Environmental Protection Act

In a previous analysis[2] concerning the implementation of a CWC in Canada, it was tentatively recommended that Environment Canada might be responsible for the technical aspects of implementing the compliance mechanism domestically. It was also mentioned that enabling legislation could be devised to take advantage of the Canadian Environmental Protection Act (CEPA) and its reporting and inspection functions. These could then be used by the National Authority to obtain the technical data that Canada would be required to collect and transmit to the International Authority, and to facilitate inspections under the CWC. These tentative conclusions, which will need to be reconsidered in detail in due course, followed from an assessment of a moderate workload, viz.: (i) the need to report on non-possession of Chemical Weapons and Chemical Weapons

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[2]Role and Function of a National Authority in the Implementation of a Chemical Weapons Convention, Ottawa: Government of Canada, August 1989.

Production Facilities; (ii) moderate capacity for research for protective purposes requiring small-scale synthesis of schedule 1 chemicals; (iii) probable non-production of schedule 2 chemicals above established thresholds; and (iv) modest production of schedule 3 chemicals. It was concluded that an approach would be to assign to Environment Canada the duties of data collection, review and transmission of data to an International Authority, as well as certain duties with respect to assisting on-site inspection activities of the International Authority within Canada. Other duties could be assigned to External Affairs and International Trade Canada as well as to the Department of National Defence.

Appendix I lists the pertinent clauses of CEPA that relate to the proposed CWC.

The draft CWC has three Schedules by which chemicals of interest to it are to be controlled. The level of control is essentially related to the risk the substances present to the objectives of the Convention. This means that the items on schedule 1 of the CWC will likely only be found within government organizations and be used for permitted purposes (mostly related to protective purposes). One exception would be certain nitrogen-mustards that have found a use in cancer therapy. Substances on schedule 1 are unlikely to be found in commercial or research use after a CWC comes into force. Schedule 2 chemicals are considered to be 'dual use' and many will be manufactured for legitimate purposes but will have to be controlled to prevent their misuse or conversion to schedule 1

substances. The international verification regime will involve inspection and data collection. Schedule 3 chemicals are in widespread use throughout the world and, as presently envisaged, will be subject to data collection only. There will also be the possibility of challenge and/or ad hoc inspection of any facility which may have certain specified capabilities.

Substances on schedule 1 could be added to CEPA's Priority Substance List on the basis of their toxicity and, possibly, prohibited for commercial use by appropriate regulations (with provision for re-examination, should new circumstances require it.) The chemicals on schedule 2 of the CWC could be on CEPA'S schedule II, Part II, as substances requiring export notification. Schedule 3 of the CWC contains chemicals widely used in commerce and most of them would appear on the Domestic Substance List; those which do not appear would be controlled by the Non-domestic Substance List as "substances new to Canada". (Chemicals on Schedules 1 and 2 could also be placed on Canada's Export Control List and so require licensing action before export.)

Inspectors under CEPA have wide powers of entry to ensure compliance with the Act, including private dwellings under certain circumstances. They may examine any substance, take samples, open containers, examine records and data systems, and take measurements. Every person in such a location must assist an inspector if required. An inspector, on occasion, may exercise powers without a warrant if

obtaining one is impractial, e.g. when there is the possibility of loss of life or destruction of evidence. The inspector has powers of seizure and detention.

Failure to assist an inspector, false or misleading statements and obstruction of an inspector can lead to a fine of up to $200,000, or imprisonment for up to six months, or both, on summary conviction. Failure to report the manufacture or importation of a restricted substance can lead, on summary conviction, to fines of up to $300,000 or a six month jail term, or both. Offences that lead to indictment can lead to penalties of fines of up to one million dollars, three year terms of imprisonment, or both. Damage to the environment, death or harm to persons are indictable offences with possible prison sentences of up to five years, fines, or both. Continuing offences are liable to be treated as separate offences with guilty parties being convicted of separate offences for each day that the offence continues. If a corporation is convicted of any offences, any officer, director or agent involved is considered a party to the offence and is liable to punishment. An inspector also has the option of serving a summons as a "ticket offence" with appropriate penalties.

All of the chemicals of concern to the CWC appear on one of three Schedules and the International Authority requires that each State Party, through a National Authority, reports on its compliance with the provisions of the CWC. All of the substances referred to in Schedules 2 and 3 are of interest to those agencies charged with

control of chemicals in the environment, the workplace and during transportation. These agencies would have to be informed of their import or export, their use in the workplace, their transportation, and their subsequent disposal. It should be possible for a National Authority to receive the information currently collected by government departments for regulatory purposes. What is required is a detailed analysis of the information currently collected and consideration of the appropriate enabling legislation.

APPENDIX I

PERTINENT ASPECTS OF CANADIAN ENVIRONMENTAL PROTECTION ACT

An Act respecting the protection of the environment and of human life and health, or Canadian Environmental Protection Act.

It would appear that this Act provides a Canadian framework which could be used to develop ideas with respect to a National Authority and the obligation under a CWC to report on certain chemicals which have been used as chemical weapons, which are potential key precursors in the synthesis of chemical weapons, or which pose a risk to the objectives of the Convention.

The Act defines the following terms: analysis, class of substance, inspector, substance, transient reaction intermediate.

The following sections are pertinent to CWC objectives:

11. toxic substances - definition;
12. Priority Substance List;
16. where a person (a) imports, manufacturers, transports, processes or distributes a substance for commercial purposes;
22. non-disclosure by the Minister of National Defence;
24. Domestic Substances List and Non-domestic Substances List;
25. manufacture or import of substances;
29. amendment of Lists;

31. regulations;

32. regulations of toxic substances - schedule I;

33. regulations - schedule I;

40. export and import of toxic substances and waste materials - Schedule II;

41. List of toxic substances requiring export notification - list of toxic substances authorities;

98. designation of inspectors and analysts;

99. inspector (also 101, 102); and

Schedule I - List of toxic substances and types of regulation applicable;

Schedule II - Part I - List of Prohibited Substances
- Part II - List of toxic substances requiring export notification.